

Physical and Chemical Changes Lab

Directions/Purpose: At each station you will perform a basic experiment to identify whether a chemical or physical change has taken place. Fill in your information in the data table below. Some lab stations will take longer than others, if you finish before it is time to rotate please work on determining if a physical or chemical change happened at your station.

Station 1: Examine a wood splint and note its physical properties in the table below. Light the wood split using a match until it takes fire and allow it to burn itself out on the ceramic tile. Record your observations in the data table.

Station 2: Strike the match and light the candle. Observe what happens both before the candle was lit and after. Be sure to observe the wick and the wax.

Station 3: Place about an inch of water in a test tube. Using a test tube holder, heat the water in the test tube until it boils. Hold a dry test tube upside down in the escaping steam for a minute or two. What is the product that condenses on the tube? _____ Record your observations in the data table.

Station 4: Examine and note the properties of copper. Hold the copper strip with the crucible tongs and heat it in the Bunsen burner flame for several minutes. Examine and note its properties after heating. Record your observations in the data table.

Station 5: Put a pinch of sugar on a small piece of aluminum foil. Place the sugar/aluminum foil on the hot plate. Turn the hot plate on to a setting of no higher than 4 or 5. Heat the foil for several minutes. Note the properties of the sugar before and after heating. Record your observations in the data table.

Station 6: Observe some salt. Place a small amount of salt in a clean mortar and pestle and grind it into a powder. Use a spatula to place some salt in a test tube of water. Record your observations in the data table.

Station 7: Measure 5 mL of sodium hydroxide (NaOH) in the graduated cylinder. Add the 5 mL of sodium hydroxide to a test tube. Add 2 drops of copper (II) nitrate ($\text{Cu}(\text{NO}_3)_2$) solution to the NaOH in the test tube. Record your observations of before and after the addition in the data table. Place the waste from the test tube in the waste beaker.

Station 8: Take one small piece of magnesium ribbon. Place the magnesium ribbon onto a petri dish and add two drops of HCl. Observe what happens.

Station 9: Place a scoopful of baking soda in the petri dish. Add a small amount of vinegar to the baking soda. Make an observation before adding the vinegar and after adding the vinegar.

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Data Table:

Observations

Materials	Properties Before	Properties After	Chemical or Physical Change? Why?
Wood			
Candle			
Water			
Copper			
Sugar			
Salt			
$\text{Cu}(\text{NO}_3)_2$ and NaOH			
Mg and HCl			
Vinegar and Baking Soda			

Discussion of Theory

In detail, explain the concepts and ideas of the lab experiment. Think about answering what, why, and how for each idea/concept. To further help you, consider the following questions: What are properties and changes used for? What are the different types of properties and changes? What is the difference between a property and a change? How do you identify a property versus a change? How would you show/prove that a change happened versus a substance having a property? Does the application of heat to a substance always produce a chemical change? Provide at least two specific examples (from the lab) for each type of property/change to further help your explanations and make sure to explain your examples.